# Weiye Yin, Atsushi Mishima, Carlos Ortega Elizalde & more!

Gallery - 10 of the best Images from around the world!

#### **Philip Herman**

3dcreative interview this fantastic 3D character modeler Artist.

#### "Tribeca loft"

Project Overview by Bertrand Benoit.

# SCULPTING, LOWPOLY 8. ANATOMY



#### **Classical Sculpture**

**Rafael Ghencev** brings us the third chapter of the **Classical Sculpture** tutorial series. This month focusing on creating a Roman bust.



#### **Low Poly Characters**

**Tamara Bakhlycheva** continues her **Low Poly Characters** series this time she gives us a Mapping and Un-wrapping master-class!



#### **Unreal Games Engine Tutorial**

Lighting and Post Effects is the final subject covered in **Andrew Finch's Italian Courtyard** UDK tutorial series.



#### Modeling Features of the Human Anatomy

Jose Lazaro, Gavin Goulden, Lino Masciulli & Anto Juricic explain the process of creating hair in chapter 3 of our Human Anatomy series.

**CONTENTS** 3dcreative



#### **EDITORIAL**

Welcome to the 70th issue of 3Dctreative magazine. A big thanks go to Carlos Ortega who provided this month's outstanding cover! You may have seen this fantastic image in some of the CG forums, well we couldn't resist the urge to stick it in pride of place on the cover of our magazine, well done Carlos.

This month we boast a huge selection of fantastic tutorials, but first we will mention the great Features of the anatomy series. If you are a character modeller or would like to be this is the series for you. So far each tutorial has walked us step by step through a logical approach to creating each feature, and this issue is no exception. Each of our artists talks us through an easily reproducible approach to creating hair in their software, and without any prompting at all remarkably they have all done a different hairstyle! As always we have Jose Lazaro in 3ds Max, Gavin Goulden in Maya, Lino Masciulli in Cinema 4D and Anto Juricic in Modo.

Tamara Bakhlycheva continues her gripping series this month by giving us a Mapping and Un-wrapping master-class! This series is developing into a real gem. If you are into the old school way of creating lo-poly character you really need to get your hands on these tutorials!

June is a sad month for me! Andrew Finch has finally completed his UDK tutorial and his fantastic Italian Courtyard. I have loved learning from Andy and taking full benefit from his industry experience. Andy tells you in this issue how to export your game into a playable file so I am hoping to get a chance to try some of your creations in the coming weeks, send your level to me at simon@3dtotal.com and I will let you know what I think.

The Classical Sculpture series has been a real surprise package. The tutorials have been an insight into not only the history of sculpture and its varying styles, but also into some of the amazing tools available in ZBrush. In this issue Rafael Ghencev turns his attention to Roman Sculpture and specifically a bust.

If I am honest with you I see a lot of interiors done in 3D, but every now and again one pops up that is done particularly well and that is the case with this month's Making Of by Bertrand Benoit.



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Tribeca Loft" Project Overview by Bertrand Benoit



"Poker Master" Digital Art Masters: Volume 5 - Free Chapter



Modeling Human Anatomy



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#### FREE STUFF!

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Bertrand's Tribeca Loft is a fantastic and detailed scene, boasting some very well executed lighting. If you like modelling interiors you will love this making of.

This month's interview is with a fantastic character modeller and texture by the name of Philip Herman. We also have further amazing art work in the gallery this month by great artists such as Carlos Ortega, Weiye Yin, Luis Nieves and many more. I hope you enjoy the latest instalment!



#### SETTING UP YOUR PDF READER

For optimum viewing of the magazine, it is recommended that you have the latest Acrobat Reader installed. You can download it for free, here: DOWNLOAD!

To view the many double-page spreads featured in 3DCreative magazine, you can set the reader to display 'two-up', which will show double-page spreads as one large landscape image:

- 1. Open the magazine in Reader;
- 2. Go to the VIEW menu, then PAGE DISPLAY;
- 3. Select TWO-UP CONTINUOUS, making sure that SHOW COVER PAGE is also selected.

That's it!

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If you're having problems viewing the double-page spreads that we feature in this magazine, follow this handy little guide on how to set up your PDF reader!







#### **CONTRIBUTING ARTISTS**

Every month artists from around the world contribute to 3DCreative, and you can find out a little more about them right here! If you'd like to get involved in 3DCreative magazine, please contact: simon@3dtotal.com



#### JOSE Lazaro

Jose Lazaro is a freelance character artist based in the UK. After working in big titles like CastleVania: Lords of Shadow and



Dead to Rights he has decided to change his career creating characters for indie games with more artistic and technical control, developing the pipeline and the final result. Currently he is a mentor for one of the best CG schools. http://ballo.cgsociety.org/gallery ballobello@gmail.com



#### GAVIN GOULDEN

Gavin Goulden is a character artist for Irrational Games working on Bioshock Infinite. With 6 years games industry

experience, he has contributed character and environment art assets to multiple titles including Dead Rising 2, The Bigs 2, Damnation and FEAR 2.

http://www.gavimage.com/gavin@gavimage.com/



# MASCIULLI Lino Masciulli wo as an art director the advertising fi

Lino Masciulli worked as an art director in the advertising field until 2006. In recent years he moved into the entertainment

LINO



industry by working as the senior modeler for Rainbow CGI in Rome participating in the production of "Winx and the Secret of the Lost Kingdom", "Winx Club 3D Magic Adventure" and other movies. He currently works for the same company on other animated feature films. www.linomasciulli.com | cardinal\_@hotmail.it



#### ANTO JURICIC

Anto Juricic Toni is a character artist and he currently lives in Bosnia and Herzegovina, where he works at Primetime

Studio as a modeler and texture artist on animated features. Along with his passion for creating CG characters he also enjoys teaching others and sharing his techniques through many online tutorials and publications. http://anto-toni.cgsociety.org/gallery/monty.band@gmail.com



#### ANDREW FINCH

Aged 28 and living in the great city of Birmingham, in the U.K. He has a degree in 3D Animation which inspired his



passion for environment art. He now works as an environment artist at Codemasters. He says, "Working in the games industry is exciting: you never know what the next project will be and there's always something new to learn. This helps to keep you creative and grow as an artist." afinchy@googlemail.com

www.3dcreativemag.com

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#### Rafael Ghencev

Rafael Ghencev is Brazilian character artist. He studied film animation, but it is in traditional art that he considers to

be the greatest secret of art. Because of this he is always studying sculpture, painting and photography.

http://rafaelghencev.wordpress.com/ rghencev@yahoo.com





#### Tamara Bakhlycheva

Tamara Bakhlycheva was born in Russia. She graduated traditional art-school and art-college and now resides in



Moscow, working as freelancer 3d characterartist and dreaming about working for Blizzard.

Tamara loves to play video games and has done since the age of 5. Tamara has been making art for video games since 2005.

http://first-keeper.livejournal.com/tamara.salatova@gmail.com



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### 3D CHARACTER DESIGN SERIES WITH SCOTT PATTON

In this two volume series, Scott Patton shows the processes he uses to create a 3D character for feature films. The first volume explores Patton's fast and efficient method for concept sculpting, skipping the 2D sketch phase all together and designing the character entirely within ZBrush®. He covers everything from blocking out the forms and fleshing out the muscles, to adding props, detailing with alphas and posing the character. The second volume covers methods for creating a final color rendering using ZBrush and Photoshop®. Patton shows how he squeezes the most from ZBrush's powerful renderer to create both a wide and close-up shot of the character. He then shares creative Photoshop tips and tricks to quickly get to a finished piece of concept art from the ZBrush renders, covering topics such as adding and refining skin texture, hair, eyes, shadows and scars. Patton also discusses how to create backgrounds that enhance the character and overall composition.

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#### Interview with Philip Herman

#### Hi Philip, can you say a few words about yourself and your field of work in CG?

Hi everyone. My name is Philip Herman and I was born in Jakarta, Indonesia. Currently I work in Singapore and have been since 2005. I've been working in the games industry as a 3D character modeler for six years, and my primary areas of work are modeling and texturing.

#### I see you're a self-taught artist – can you tell us how you became involved in the field of CG, and has it all been hard work until now?

Since childhood, I've always been fascinated by Disney cartoons, video games, and manga. I dreamt of being involved in such projects. After I graduated from high school, we didn't have any colleges specializing in CG at that time here in Indonesia. So I went to take up graphic design, but my passion for games and animation was always there. So when I was in college, I bought some books with 3D tutorials in them and found some CG tutorials on the internet so I could teach myself. After I graduated, I just created my personal portfolio at home and tried to get a job in a CG company. I got an offer from a games company in Singapore that saw my artwork in a local CG forum. I guess my hard work did pay off!





#### "EXISTING WORKS ARE THE IDEAS AND EXPRESSIONS OF OTHERS, SO BY REFERRING TO THEM I CAN DEVELOP, FORMULATE AND EXPRESS MY OWN UNIQUE IDEAS"

Recognizing your enthusiastic spirit as an artist I feel you must spend a lot of your free time doing personal projects. Can you manage without working late in the nights? I always think, "If you want to be better than others, you need to work harder than others". I feel I will not improve if I don't use my time to learn and try new things. There are lots of great artists out there that motivate me and there's always room to improve... I need to work hard to achieve my dream.

About working late, I think it's just part of being an artist. To me late nights are not really an issue, it's more about how passionate you are about art and to what extent or level you want to push it to. I know there are some talented artist that can work very fast, but for me, I sometimes still work late. It's very rare for me to be asleep earlier than 12.00 AM when I am working on a personal project.

Any problems going from one character/ project to the next one, in terms of the ideas that made the previous work? If so what's your way of starting from scratch and producing recognizable and unique masterpiece without "looking back"?

I treat each project as a new challenge. I don't really have any particular style. I like to try and discover new styles. Existing works are the ideas and expressions of others, so by referring





to them, I can develop, formulate and express my own unique ideas. At the moment, I prefer to make characters that have strong characteristics or expressions, just like characters from Disney, Pixar, DreamWorks etc., which I try to learn and study from. My current personal project is to create a character in a Disney style. I hope I can capture it well; I will post it as soon as I finish.

#### What helps you create art? What inspires and guides you?

I am inspired by great artworks by other artists, or from movies or games. There are some famous artists that I admire and looking at their great works motivates me to reach their level. When I want to create an image, I try to have a concept or at least an idea of what I want to create. I usually have an art book for reference and the internet in front of me when I work. I build upon ideas that help push my creations to the next level.

How important to your art is feedback from the community and can it alter its course? I think feedback is very important for a person who is committed to continual learning and growth. I always ask for feedback from fellow artists around me. Whether it can alter its course, I will say it depends on the feedback itself because sometimes feedback isn't exactly what you expect, But ultimately it's what helps us grow and improve.

Your artwork differs from characters portraying their intentions, nature and emotions to full character scenes that aid describing the characters even more. Presentation-wise, two pieces of your artwork, Sagat and Daredevil vs. Kingpin, have a unique way of highlighting the moral of the story. Are there tricks or a special workflow that helps you create a greater impact?

Daredevil vs. Kingpin was actually inspired by Marko Djurdjevic's work. I've always loved comic books, and Djurdjevic's portrayal of Daredevil really stunned and inspired me to create Daredevil vs. Kingpin. I changed the villain to Kingpin because I like Kingpin, and I tried to make the artwork more bloody and fierce. As for the background and presentation, I merely stay faithful to their styles, such as the ink splatters of Street Fighter IV. And for the characters, I like to compose them in ways that best express their physiques and strengths.

Have you ever stray from the concept and experimented in a way that helped you develop the style and character further still? If so, how did you use this experience on later projects?

Initially I brainstorm and create a few varieties of rough sketches and concepts. From there I have the freedom to explore and experiment with various ideas. I will try out different styles until I achieve one that I am satisfied with. From there on, I will develop the idea further and take it to completion. Other ideas that I didn't use are not wasted; they can be referred back to later as inspiration when other projects call for it.

#### Do you take greater pleasure from work or personal projects?

Hmm... I would say personal projects because I can express everything that I want in my



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personal art. With personal projects, I can try new things and it gives me pleasure when I learn something new while trying to do something hands-on with it. I learn a lot more this way, through trial and error.

Given everything you've said, I feel like you're jumping from one personal project to the next. Working with that tempo can you allow yourself to enjoy the accomplishments and awards given to your artwork, or is your mind and heart always already moving onto the next project?

I always look forward to the next challenge.

Once a piece is done, and I feel I have given my best and all, then I will take a break – like playing games, hanging out with friends etc.

I will feel very pleased if my artwork gets an award or other recognition, but I tend not to dwell on the past as it makes me stagnant. Then I will proceed and fully focus on the next project.

### Thank you for taking your time, I hope we didn't keep you from finishing another brilliant image.

Not at all, and thank you for this interview, it's a real pleasure and honor to be featured in your magazine.





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OWL Weiye Yin

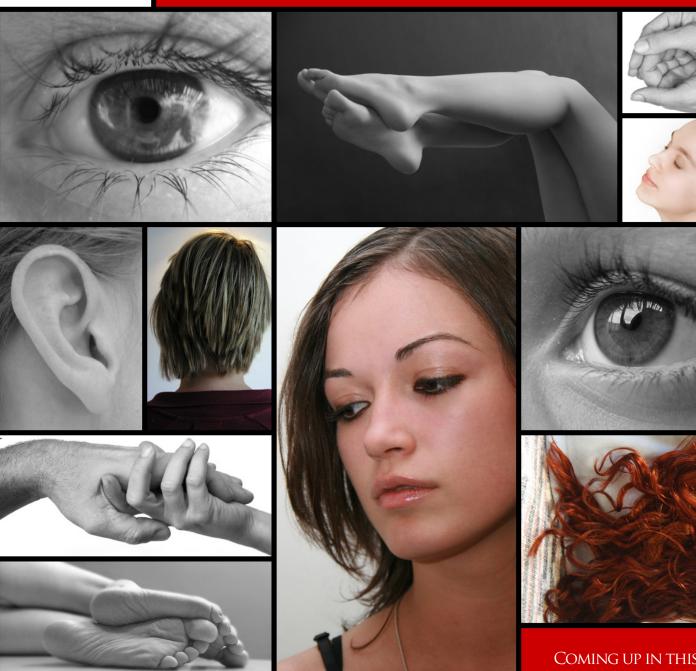
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### **MODELING FEATURES OF** THE HUMAN ANATOMY

CHAPTER 3 - HAIR



Modeling the features of characters is something that has caused problems for many artists over the years. A good model can easily be spoiled by an incorrectly modeled feature, such as a hand or an ear. This eBook offers a step-by-step guide to help you make sure you never struggle with feature modeling again, presenting detailed chapters that have been written specifically for 3ds Max, Maya, Cinema 4D and modo.

#### COMING UP IN THIS ISSUE...

This month our artists will show you how to model hair.

So if you're interested in seeing the third chapter of this great series, please flip to the back of this magazine and enjoy.

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MAYA - PAGE 072

💮 Cinema 4D - Page 076

MODO - PAGE 082





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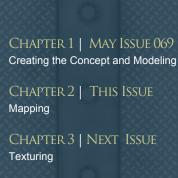
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CHAPTER 4 | AUGUST ISSUE 072 Rendering and Presentation



# LOW POLY CHARACTERS

Low poly characters with painted textures
can seem a little old school at times, but in this
series Tamara Bakhlycheva embraces the old
style and shows us how to do it well with fascinating
results. In this series Tamara will walk us through the entire
process from the basic modeling through to the texture painting
and posing. Most of the steps will be taken in Maya, but there will
also be an opportunity to look at the benefits of using other pieces of
software in your workflow.

#### LOW POLY CHARCTERS Chapter 2: Mapping

#### **3dcreative**

#### Chapter 2 - Mapping

Software used: Maya, Photoshop, ZBrush, Deep Paint, Marmoset Toolbag, Adobe Premiere & Faogen

The first thing that we need when unwrapping is a good checker texture. I usually use this one (Fig.01).

I created a new Lambert material and assigned my checker tile to the Diffuse option. In UV Coord you can change how many times this tile should repeat. You probably won't see any differences after assigning this new material to your mesh. That is because it doesn't have default UV coordinates yet. To create basic UVs go to the Create UV's menu at top and choose Create UV's Based On Camera. This will mess up the UVs, but it is enough to start working with. I apply it to all the meshes before working with RoadKill or Unfold (Fig.02). Road Kill UV Tool is a very useful free plugin for Max, Maya and XSI. You can find over the web.

On this picture (Fig.03) I wanted to show out a few tools used for UV mapping in the UV Texture editor. I won't describe all the tools, but I'll show some of the most useful ones. You should explore others too, maybe you'll find something useful for different situations.

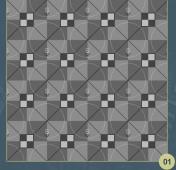
Flip and rotate - I think it doesn't need explaining.

**Sew and separate** - These tools are for sewing and cutting UV parts.

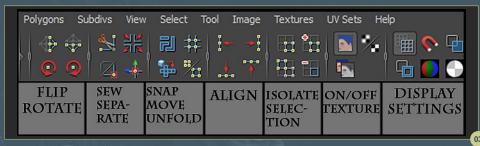
**Snap**, **Move**, **Unfold** – These are good for automatic mapping, but not in our case.

**Align-** This is an alternative for the Align by Scale tool.

**Isolate selection** – This can help if you want to unfold half of a UV and keep straight borders after alignment.







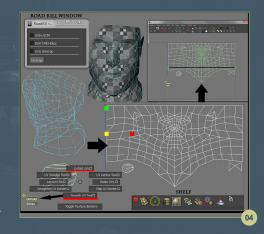
**On/off texture-** During the mapping process this will dim dark background which will be good when we do the eyes.

**Display settings**- This toggles the display for the texture borders on the active mesh (you have to switch this function on for each separate mesh).

The Road Kill script looks like a small window with 3 options and one button. I don't usually use those options. In edge mode select the edges which are going to be UV seams. Try to minimize the amount of UV pieces and draw seams on hidden parts. Before you unwrap check carefully that your mesh doesn't have any instanced copies and that everything is unhidden, if you don't some errors will occur. Select all seams and press the Unwrap button in the Road Kill window. Switch on UV point mode and open the UV Texture editor. Shift + right click menu will be another favorite trick in your arsenal. There are two main tools which we'll use very often; Unfold UV's and Smooth UV Tool (Unfold and Relax). These two Unfolds are not the same, you can see differences between each if you try it. I selected UV points and unfolded the cap of head. This part will be invisible which is why this UV shell is so small. Actually those faces can be deleted as well. For

the large character face UV's I used scale to align the horizontal and vertical border points. I also aligned two points along the seam (black line with green dots on pictures) and unfolded the rest of the UV's except the straight borders (Fig.04).

Why did I do that if it's going to mess up our texture on the borders? For game models (especially for old-school models) is very important to optimize not only polygons but count texture distribution too. Even if we have small textures we still will be able to make our texture resolution higher by using smart and rational UV layouts. Having straight UV borders always helps, because square or rectangular pieces are easier to layout as you can see in the pictures later. It's also a good thing to group a few UV shells from one object together, this



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is kind of strange when one half of that is at the top and another half is somewhere far from it (Fig.05).

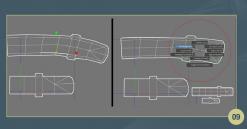
We are going to create our texture using Projection texturing. Stretches won't be obvious. At the same time it doesn't mean you should ignore stretches. Keep your eye out for them and deal with them as they arise (Fig.06).

Raw UV shells of the hands look like fans and require a lot of space on the map, which we can't afford. In **Fig.07** you will see that I merged two UV shells for the hand with a seam. Pay attention to errors on fingers, it'll take some time of careful tweak them point by point, but handmade mapping will make your texture neat and save you some UV space as well.

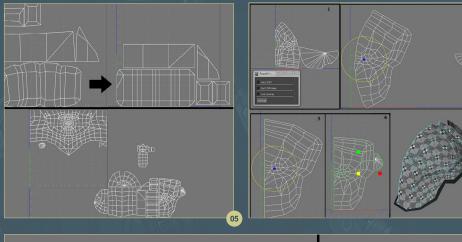
The simple way to stick them all together is select all of these pieces and Move and sew the selected edges (Fig.08).

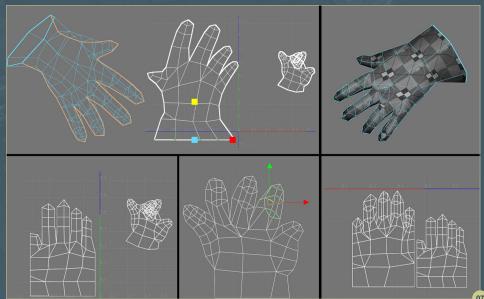
Another useful tool is the UV Smudge Tool. If you need to straighten some curved UV shells like on part of the belt (Fig.09) you can use the UV Smudge Tool and after that align the border UV's.

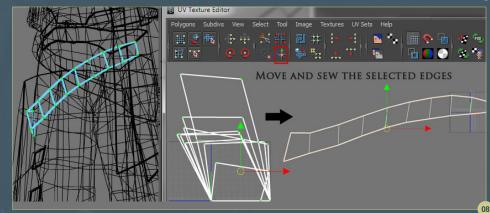
Soft selection works for UV with same hotkey (B). I moved the less important part of scarf up slightly. The texture for the head will be about 516 x 256 but before I exported the UV as a png I scaled it into square. The head checker looks pretty bad after this sort of manipulation, but don't worry it will work correct with a 526\*256 texture. Make sure that your mesh is selected as an object (green wire frame) before you push the ok button in the UV Snapshot dialog window. It won't take a snapshot if your model in a different mode (**Fig.10**).

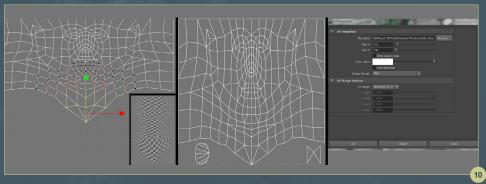


#### Chapter 2: Mapping LOW POLY CHARCTERS



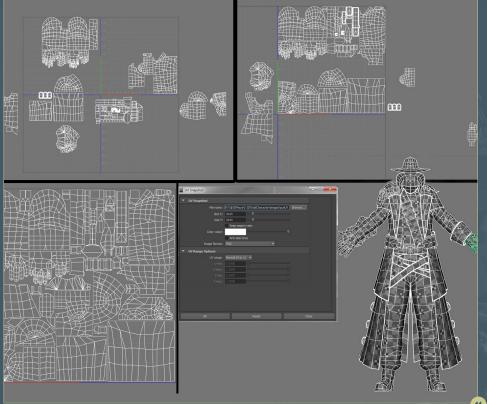






#### LOW POLY CHARCTERS Chapter 2: Mapping

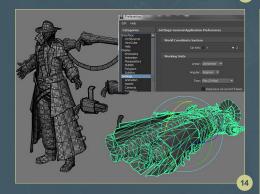
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Composing all shells in one field is like a game of Tetris. You have to rationally put them together without changing them too much. The checker texture on all parts should have the same size of squares, but areas that you can't see on the character can be small on the UV map. Parts on the head, shoulder, upper chest and back could be slightly bigger because as I mentioned before in the modeling part, these places are the first points that grab the viewers' attention. Be careful with scaling, the character should look good as a whole (Fig.11).

Here are three samples of my mapping (Fig.12). When baking an Ambient Occlusion (AO) we'll be using a program called Faogen (official page http://www.rusteddreams.net/faogen.html). We need to do a couple things before exporting the model for baking. Select the symmetry UV's and scale them into one small piece. For this you can use select UV shell. That function allows us to select all UV's within the shell just from 1 selected UV point (Fig.13).

Not every program has the same YZ axis orientation. If the model looks wrong in Faogen





you'll need to adjust your model in Maya before you export it export. You can check and turn the Maya axis for your current project in the menu (Window/Setting-preferences/Preferences/Settings) (Fig.14).

Faogen has a very simple main menu. You can switch between a 3D and UV view. The yellow triangle initiates a baking process. I baked two

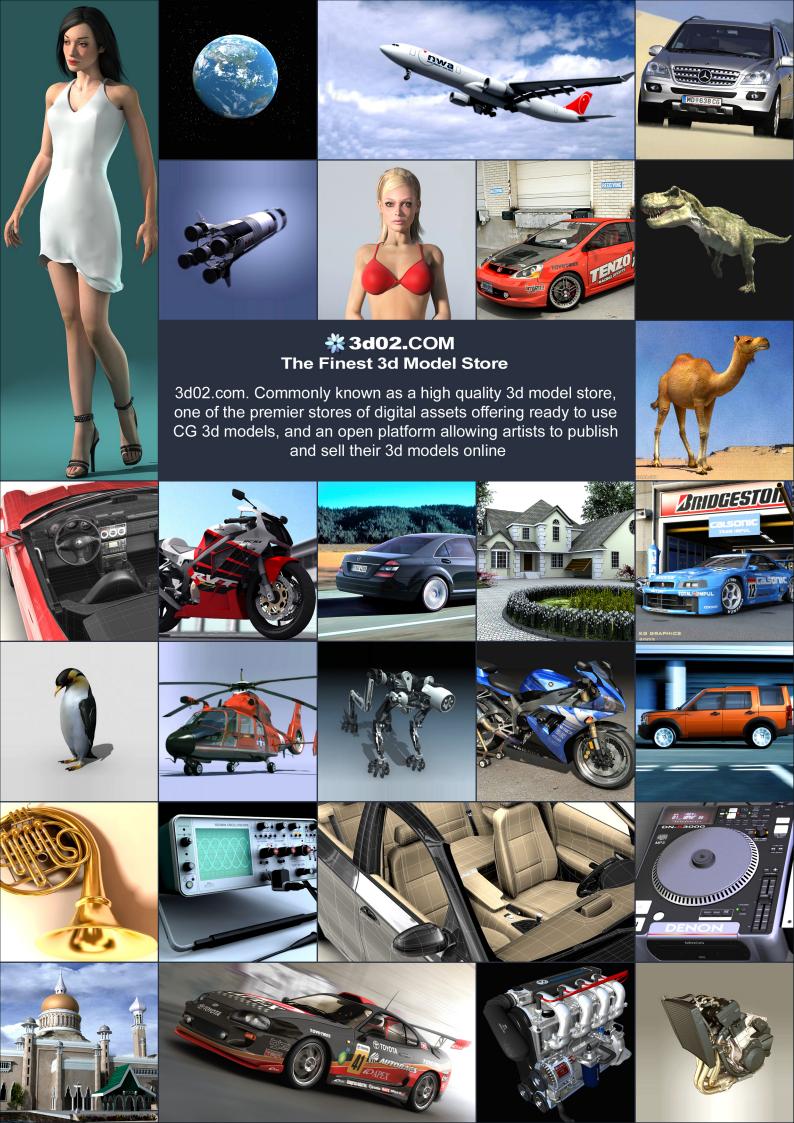


types of AO - default and directional, I'll use both of them for the base lights and shadows for my texture (**Fig.15**).

Sometimes for proper results it's better to bake separate meshes together, for example the hat should cast a shadow on the face (Fig.16).

#### TAMARA BAKHLYCHEVA

For more from this artist visit: http://first-keeper.livejournal.com/ Or contact them at: tamara.salatova@gmail.com





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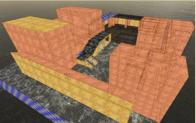
Our alumni have received accolades from Oscars to Ariels, Golden Globes to the Guggenheim, and their work has been featured in acclaimed films such as *The Princess and the Frog*, *Thor*, *The Dark Knight*, and *Rango*.



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#### Chapter 8 - Lighting and Post Effects - B

CHAPTER 1 | NOVEMBER ISSUE 063 Project Planning & Software Explanation

> CHAPTER 2 | DECEMBER 064 BSP Creation - Draft lighting

CHAPTER 3 | JANUARY ISSUE 065 Static Meshes and Texturing Part 1

CHAPTER 4 | FEBRUARY ISSUE 066 Static Meshes and Texturing Part 2

CHAPTER 5 | MARCH ISSUE 067 Layout - A

CHAPTER 6 | APRIL ISSUE 078 Layout - B

CHAPTER 7 | MAY ISSUE 069 Lighting and Post Effects - A

CHAPTER 8 | THIS ISSUE Lighting and Post Effects - B

The video game industry continues to thrive and grow at an alarming rate, and is swiftly becoming the most obvious option for employment for anyone in the CG industry. This brand new series of tutorials provides an opportunity for anyone trying to get into the business to learn how to create a basic game level portfolio piece that would impress any potential employer. Using the Unreal Development Kit, UK-based artist Andrew Finch talks us through the entire creation process, from downloading the free software and choosing its settings, to importing and texturing accessories. This really is a must have for anyone interested in gaming or game design.

# Unreal Games Engine Tutorial - Chapter 8: Lighting and Post Effects - B

Software used: UDK (Unreal Development Kit)

Welcome to the final chapter in this tutorial series. In this chapter I will be adding the final touches to our scene to make it look as good as possible. I will be covering adding environment effects such as fog and particles. I won't show how to create particles because it would be to complex and would need a whole new tutorial to explain. I will also take a look at the Post effects system and show you how to add effects such as depth of field and colour balancing. I will also be showing you how to compile your level into a standalone .exe file that can be distributed to potential employers or just passed around friends to play for fun.

# **PARTICLES**

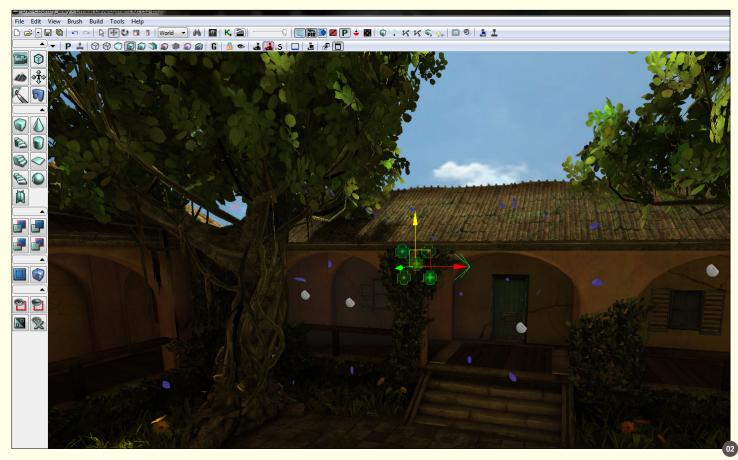
The scene is very static at the moment, the only movement we have is the water in the small



pond. Movement is very important in game environment. It brings the environment to life and really helps to get the player immersed in the scene. To add more movement we can add particles to our level. Particles are used for effects such as fire, smoke or falling leaves which is what I am going to use for our level. In the content browser, tick 'Particle Systems' in the Object Type section, at the bottom all the

available particle effects will be shown (**Fig.01**). There is a particle effect called 'Falling\_leaf' select this and drag it into the viewport and drop it anywhere on the floor.

Fig.02 shows the particle icon, I have positioned the particle system in between the two trees and moved it up to about the same height as the roofs of the surrounding buildings. Now you



can see the actual leaf particle (shaded blue). In the viewport toolbar you will notice an Icon that looks like a joystick, if you click this the viewport behaves like it is in game mode and the particles will start moving and falling to the ground.

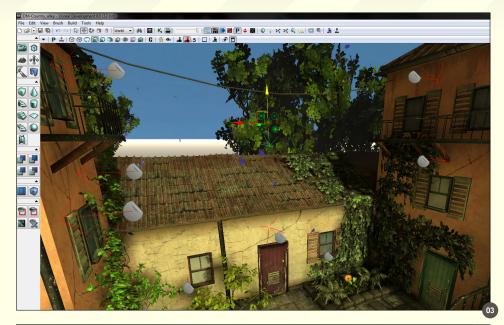
I duplicated this particle system and positioned it on the other side of the level to give the illusion of leaves falling from the trees located behind the buildings and entering the courtyard (Fig.03).

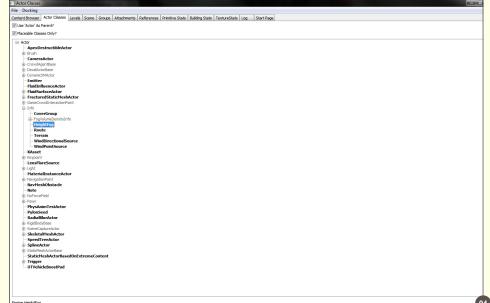
# FOG

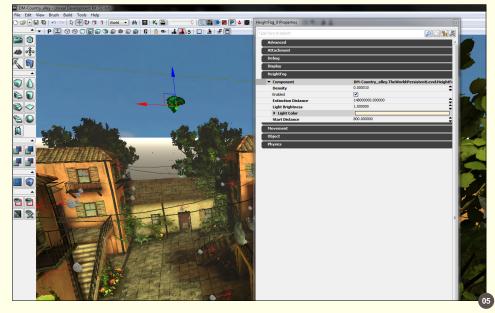
The environment even though is lit correctly, it is still quite flat. This is because we need to give the player the illusion of distance. We do this by adding effects such as fog or smog, creating a layered effect. As objects are further away from the character they are more influenced by the fogging. In real life if you can get high enough and see the horizon you will see that colours are de-saturated and faded, obviously it depends on the weather conditions how obvious the fogging is but it is always there.

To add fog to our level you need to go to the 'Actor Classes' tab located in the Asset Browser. Locate the Actor called 'Height Fog' under the Info group (Fig.04).

Right click anywhere on the floor in your level and select 'Add Actor Height Fog' and an Icon of a birds head appears (I don't know why it is a birds head). I raised the icon so it was above all the geometry in the environment. With the icon still selected hit F4 to bring up the properties for the Height Fog. Fig.05 shows the properties I used to get the final result. Play around with the settings to learn what they all do but they are self explanatory really, for the colour I went for a shade lighter than the sun colour. Try not to overdo it with the fog, be subtle. Our environment is not very big so you wouldn't see much of the fog anyway unless you're going for a foggy weather art style.







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# SCREEN EFFECTS

To start creating a more realistic and polished image we need to add Screen Effects or Post Effects. By adding screen effects we can create depth of field, bloom, motion blur and make colour corrections. These are simple settings that you adjust to get the desired effect, if used correctly they can really make your art work stand out from the crowd.

The settings for screen effects are located in the World Info Properties, click view/World Properties. Fig.06 shows all the settings as default, they are all quite self explanatory and shouldn't be too hard to understand, but it is best to just adjust the settings and see what happens on the screen. I find this is the best way to learn.

# DEPTH OF FIELD

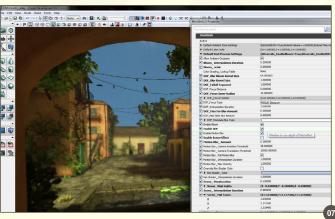
To enable DOF (depth of field) there is a check box in the World Info properties. I have shown the settings I used to get the following result in Fig.07. Remember to be subtle and not overdo it. DOF can really mess with the viewers' eyes and make them feel sick and it also blurs your artwork and hides detail so it is best to use it subtly. This will in turn be more realistic. If you are adjusting the settings and not seeing the changes in the viewport you may need to enable the viewport to render screen effects. You do this by pressing 'G' on the keyboard. There is also a check box in the World Info Properties called 'Enable Screen Effect' you may need to check this on to be able to see the effects.

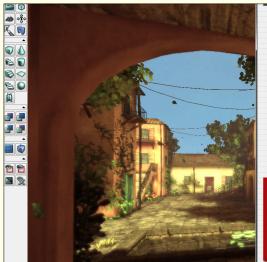
# COLOUR CORRECTION AND BLOOM

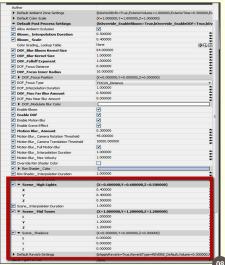
Bloom is very simple. You just enable it by checking the tick box and adjusting the settings in the 'Bloom\_scale'. This effect adds a slight glow around the specular highlights, an effect you often see in cameras.

Colour correction is one of my favourite tasks, you can totally change the look of your work instantly and you can get some stunning effects,











the process also helps to create a polished professional piece of work. To start Colour Correcting you need to adjust the 'Scene Highlights' - 'Scene\_Mid Tones' and 'Scene\_ Shadows'. Each section has 3 channels to adjust. I have shown my settings in Fig.08.

These settings provide a warm orange hue to the scene and help to create a sunny, hot day look. Use my settings as a guide but play around with the settings to really understand what they do and how powerfully the effect can be. **Fig.09** shows a side by side shot of the

scene with Screen effects on and off. As you can see the difference it has made is drastic and improves the quality.

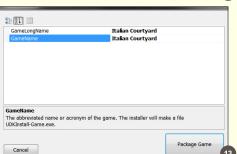
Fig.10 - 11 shows aerial shots of our environment to give you an idea of how the screen effects has influenced the environment and raised the quality. I hope you can see how important this process is and how beneficial it will be to you when it catches the eye of potential employers.

## **CREATING YOUR GAME!**

You can't send your maps, textures and assets to a game studio for them to look at. It's just not logistically possible. But what you can do is package your game files into one standalone easy to install .exe file. The process gathers all of your assets and packages them into one file allowing you to easily distribute your artwork in an impressive way. Screenshots are ok but to actually be able to walk around your artwork and study it should really impress the person viewing it, it would also show you have some technical ability and understanding.

To create your installer file you have to use a new program called 'Unreal Frontend'. With the program open under the 'Game' tab browse to your saved map file, highlighted in **Fig.12**. I







leave all the settings as default and click 'Cook' in the top tool bar. You will notice a lot of text starts streaming on the right hand side of the program, this text is useful to keep an eye on as it will show you any errors that may occur and how the general progress of the Cook is going. Once this process is complete click 'Package Game'. This will open up another window for you to name your .exe file (Fig.13). Once you have decided on a name click the 'Package Game' button and Unreal will start to compile your .exe file. The notes will tell you when the process has completed and where the file was created on your hard drive. Test your .exe by installing it and running the game, I have included my .exe with this tutorial for you to look



help you get your portfolio in a good shape to send off to game studios. Getting into the games industry is a hard path to go down and can be a very frustrating and lonely journey. Spending days, weeks or even months on a piece of artwork just to add a few screen shots to your portfolio, not knowing if it will lead to a job or even an interview! It is a path worth taking! Only the most determined will complete the journey but the reward is you get paid to do your absolute dream job. I couldn't imagine working in any other field, the thought alone sends shivers down my spine, there is nothing quite like seeing your game on the shelf in stores or a screen shot of your level in a magazine. Good luck on your journey! Thank you (Fig.14).

# CONCLUSION

So this concludes the games portfolio tutorial. I hope you have enjoyed following it and most of all I hope you have learned something that can

# **ANDREW FINCH**

For more from this artist contact them at: afinchy@googlemail.com



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ZBrush Hard Surface Techniques

Constructing a Mechanical Character in ZBrush

# ·CLASSICAL SCULPTURE



# ROMAN SCULPTING

Modern art in all genres is heavily influenced by its history. With the arrival of ZBrush came an opportunity to put into practice many of the techniques that were used in classical sculpture. In this tutorial series Rafael Ghencev will dissect the history of Greek and Roman sculpture and show you how to create an image in that style. Not only will Rafael talk you through the sculpting, but will also show how to texture and present your sculpt in a classical style. This series will also give some great anatomy tips, and provide you with some great tricks to help you present your sculpts.

CHAPTER 1 | APRIL ISSUE 068 Greek Sculpting

CHAPTER 2 | MAY ISSUE 069 Greek Sculpture Texturing

CHAPTER 3 | THIS ISSUE Roman Sculpting

CHAPTER 4 | NEXT ISSUE Roman Sculpture Texturing

# CHAPTER 3 - ROMAN SCULPTING

Software used: ZBrush

I hope you enjoyed the first two parts of this tutorial series. In this issue we are going to learn a little about Roman sculpture. To be more specific: roman busts.

# ROMAN SCULPTURE

Roman sculpture was a way for them to create a portrait and they did this as a form of ancestral worship. They preserved the faces of important ancestors so they could have a lasting reminder of them. A good resemblance was therefore essential so artists emphasized the most typical features of a face to capture the essence of their subject.

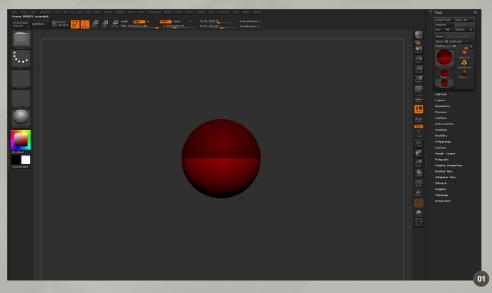
During the reign of the Flavian Dynasty (Emperors Vespasian, Titus and Domitian), a style developed called Flavian. The portrait sculptor was creating a sense of realism whilst avoiding the sculpt showing any emotion.

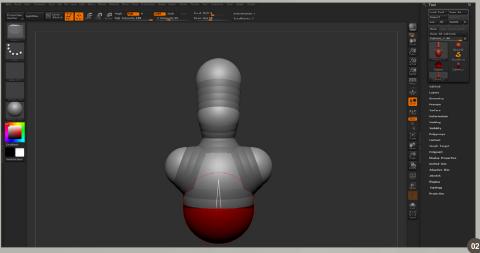
In the second century AD sculpted portraits changed and started to show a lot of emotion. The Caracalla (211 AD) is a stunning portrait that achieved a high degree of expressiveness and this was the peak of Roman busts. But thereafter the Asian influence and an interest in geometrical elements meant the portraits began to look stylized and abstract.

# ABOUT THE PORTRAITS

Emperors used the portraits primarily as an assertion of power and their political program, but busts also decorated the altars, tombs and cinerary urns of past emperors. This tradition







was linked to a long history of displaying death masks of wax or terracotta, honoring ancestors in funeral processions held to celebrate and certify their patrician lineage. These masks were proudly kept in the family shrine, the lararium, along with busts in bronze, marble or terracotta. It is assumed that the habit of making death masks to mimic the features of the dead is one of the causes for developing a taste for Roman busts.

Knowing a little about Roman sculpture I decided to create a realistic bust like *The Caracalla* (211 AD) sculpture I mentioned earlier.

# Creating a Base Mesh

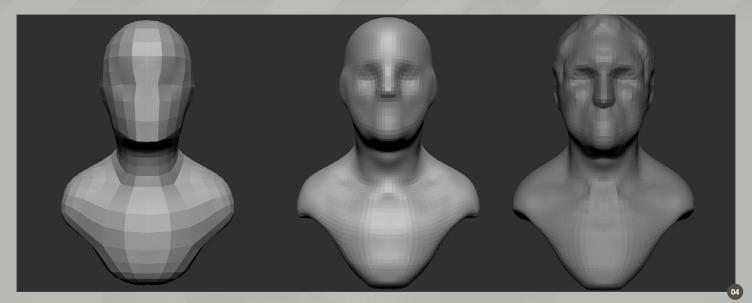
To start this model we are going to create a base mesh from ZSpheres, so open the Tool

palette and select a ZSphere (**Fig.01**). Click on X to activate the symmetry and start to add two new spheres for the shoulders, one more for the neck, two for the head and one for the beginning of the chest (**Fig.02**).

By pressing the A button we can see our topology flow, so open the Adaptive Skin palette and click on Make Adaptive Skin. This will create a new object from your ZSpheres. This will be our base mesh (Fig.03).

# BLOCKING THE STRUCTURE

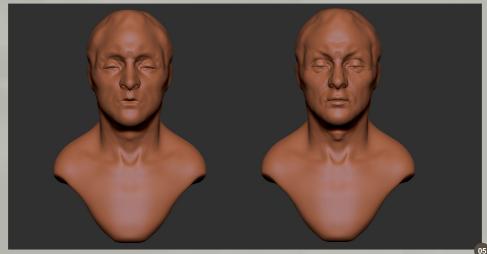
Now it is the time to work on the most important part of the process: the basic shape of the head. This is the point where we need to concentrate and pay attention. Don't jump in and rush the details. As we did in the last tutorial we need



to make the most of every division. We should start by creating the basic shape of the head using the Move brush and, when the head requires more information, divide the model one more time and work on it until it requires more divisions and so on. At this stage you only need to use the basic Move brush and a little of the Standard brush to carve some big cavities, like the orbital cavity (**Fig.04**).

# SECONDARY SHAPES

Now it is time to add secondary information like the nose, mouth and muscle structures etc. So using the Clay and Claytubes brushes start to add the eyes and better define the shape of the face, working carefully on the nose style etc. Here the important thing is to work on the whole

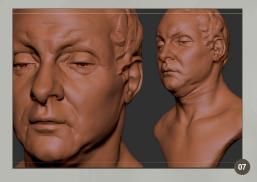


model at the same time. Don't finish one part then go to another. It is important to advance your model equally to maintain a convincing structure (**Fig.05**).

Using the Claytubes brush start to define the haircut. We don't need to make every hair strand; we only need to find the best look in its simplest form (Fig.06).



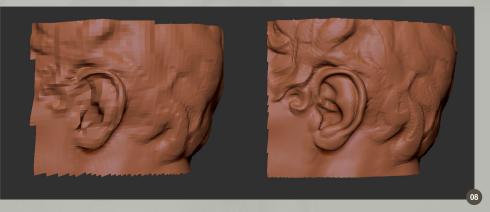
# CLASSICAL SCULPTURE Chapter 3: Roman Sculpting

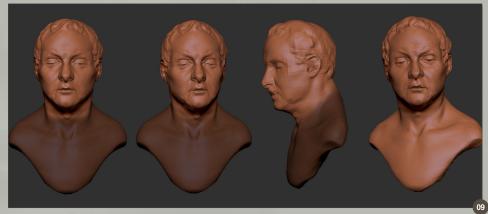


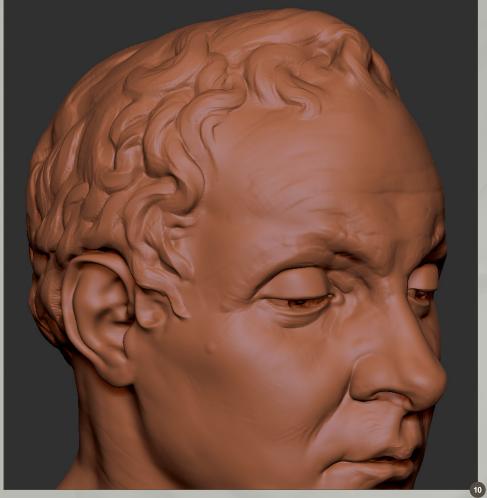
# Refining The Shapes And Pose

Now it is time to add more nuances to his face. Using the Clay brush add a little fat to his face, add some big wrinkles to his forehead and more details to his eyes to amplify his expression. I added some fat and wrinkles to his neck and on his chest too (**Fig.07**).

On the ears I worked mostly with the Standard brush and used the Inflat brush a little for the tragus, anti-tragus and helix rim (**Fig.08**).







Now, using the Transpose tool, we can break the symmetry and find a simple but expressive pose to give him some life (**Fig.09**).

# **DETAILS AND CLOTH**

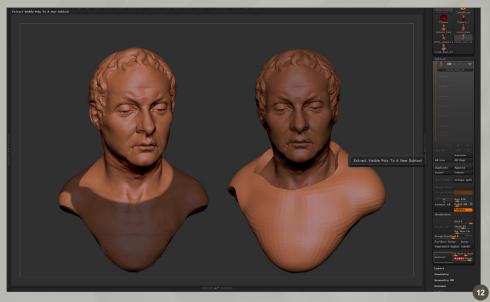
The next step is to work on the hair and give it more height and variation. To make the different parts of the hair more contrasting, add more depth to it to separate areas (**Fig.10**).

For the neck I added more fat and skin pressure caused by the pose. Everything was done using the Clay brush (Fig.11).



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It is then time to create the cloth. For this, we can use the Mask brush to paint the area that we are going to extract. After the mask is done, you only need to go to Tool > Subtool and choose the thickness of the extraction and click Extract (Fig.12).

Now, using masks, protect areas that don't need to change, select the Move brush and start to create the shape of the cloth (**Fig.13**).

Select the Standard brush and start to develop the drape of the cloth, making the folds (Fig.14).





Now we need to be patient and create some flat areas using the Polish brushes, and create more folds with the Standard brush (Fig.15).

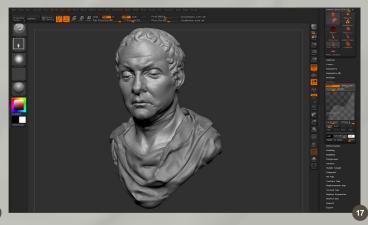
# Finishing The Piece

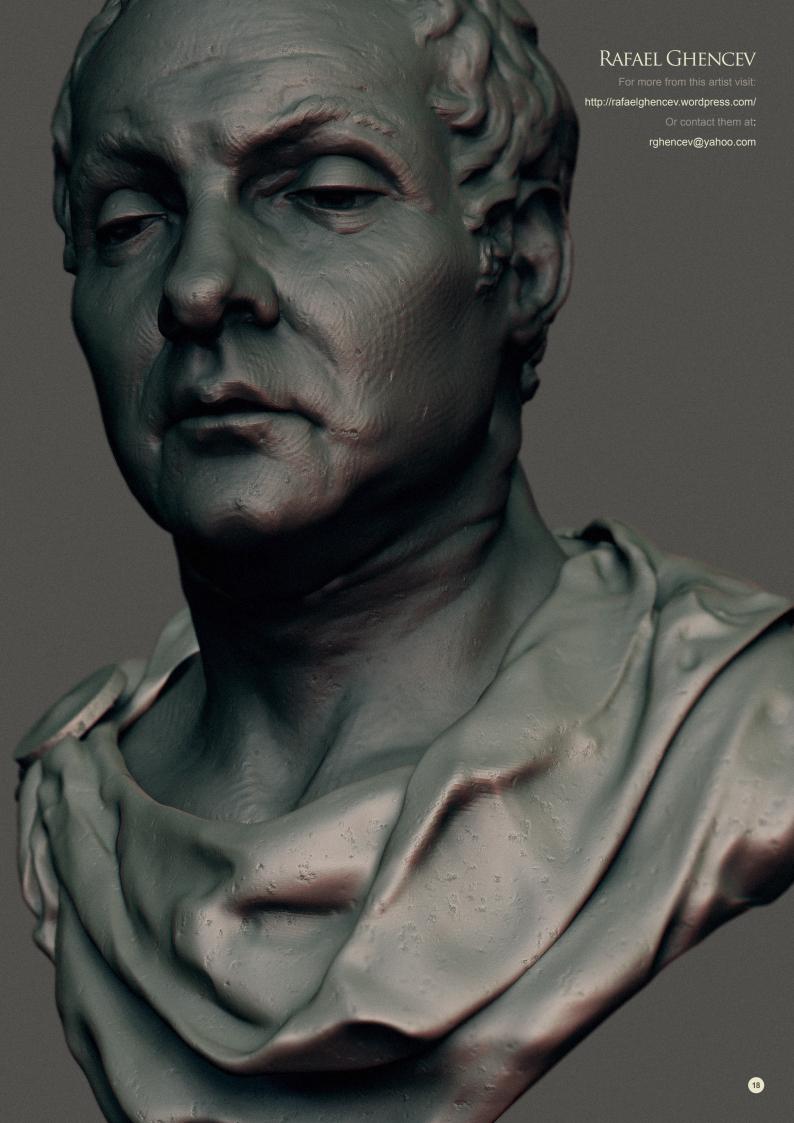
It's time to add the final touch. Select the Rake tool and create some wrinkles and cavities simulating the effect of traditional sculpting tools. Try to use organic movements to create a natural effect (**Fig.16**).

Now we only need to create noise on the surface to create the look of a traditional sculpture. Try to play with the noise curves until you find the settings that you need (Fig.17).

Here is the final model (**Fig.18**). Like I said before, the beauty of this kind of art is in the form not in the details. Always remember to concentrate on every part of the process, not only on the details.











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# TRIBECA LOFT

In this issue Bertrand Benoit talks us through the creation of his interior scene the Tribeca Loft.

Bertrand tells us his entire process but in particular goes into detail as to how he added bumps and details to all of his models and how he used a HDR map for the lighting.



# TRIBECA LOFT

Software used: 3ds Max and ZBrush

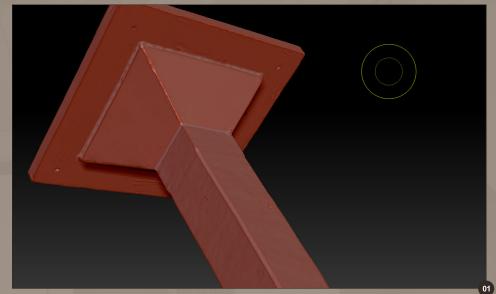
The *Tribeca Loft* series of images was inspired by the work of Fearon Hay Architects, as photographed by Richard Powers. My goal was to stick as close as possible to the photos of Richard and concentrate on realism above all.

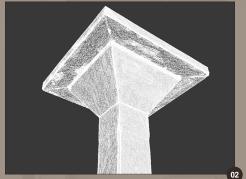
When modeling the space I sought to remain close to the look of the apartment and only took some liberties with the furnishing and the art. One challenge was to replicate the slight imperfections of this renovated industrial space. In this respect the pillars are an obvious focus of interest, and therefore I dedicated quite a bit of time to getting them right.

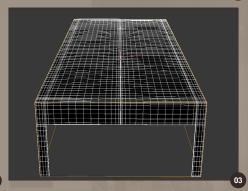
After modeling a rough base mesh in Max, I exported it into ZBrush where I used a variety of brushes to replicate the rugged surface of cement or plaster (Fig.01). After decimating the sculpt I exported it back to Max (Fig.02), adding another level of details via a cement Bump map.

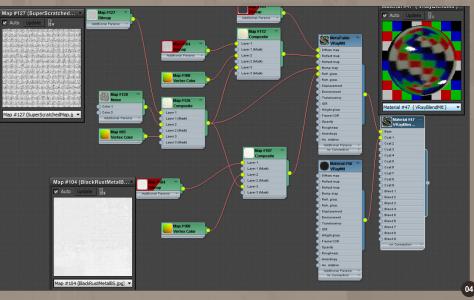
Another useful way of adding imperfections to nearly everything is the liberal use of noise textures in different slots, such as Bump, Glossy, Specular or even Displacement, or just as a Noise modifier in Max on top of the geometry. There is a lot of noise added to many of the materials and on many of the objects in this scene. Fig.03 shows how an almost imperceptible Noise modifier (fractal noise or not) will add nice random chaotic variations in the surface of the metal, which translates in nice, more realistic reflections. The same kind of low-frequency, non-fractal noise is added to the Bump channel of the plastic panels in the kitchen in order to give them a slight bend. Even the vegetable on the counter top has different forms of noise in the Bump channels.

Another use of noise (this is something I use all the time) is to break the repetitiveness of tileable textures. At its simplest, you can use this









method to texture a large area (say a building's firewall or an entire road) using maps that would cover only a small portion of that surface, but without having them show any visible tiling.

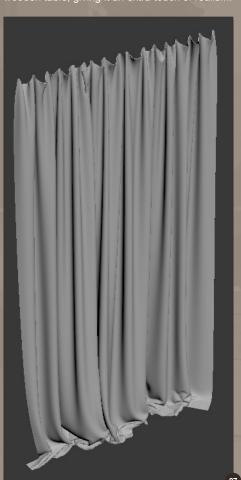
The trick is to mix two copies of the map (one of them with slightly offset coordinates) and mix them using a low-frequency, noise-based

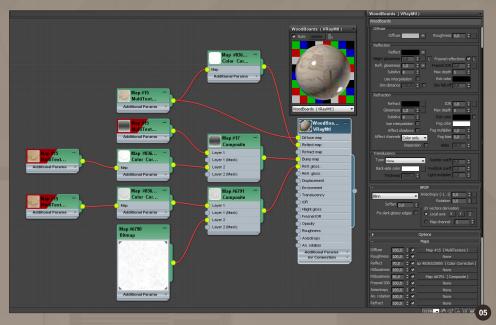
mask. This way, you get a vast expanse of nonrepeating textures with the close-up crispness of high resolution detailed textures.

In Fig.04 you can see how I used noise functions (and vertex color) to add interesting, geometry-dependent and seemingly random

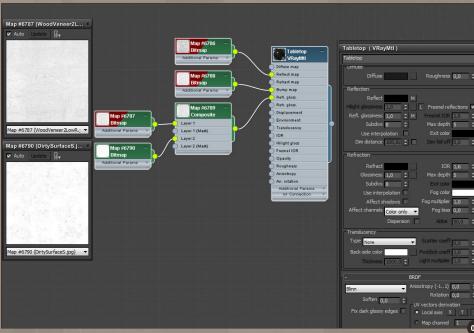
fine details to the Specular, Glossy and Bump channels of the table's metal materials, using mainly low resolution textures and no UV unwrapping. I also blended two different materials in order to give the final metal a separate coating, a bit like a car paint mat. You can see that although the Scratch map appears very tiled in the preview, it comes out looking a lot more random, once it has been mixed and masked with noise and (black and white) vertex colors.

In the same spirit, I often try to enrich my materials by adding an additional layer of Specular or Glossiness via a separate map that has nothing to do with the diffuse or other channels and is positioned on the model using different UV coordinates. It adds a lot of realism and is also a great way of hiding seams in the diffuse or the other channels. In Fig.05 – 06 you can see how I added the same generic Dirt/ Scratch map to both the floorboards and the wooden table, giving it an extra touch of realism.



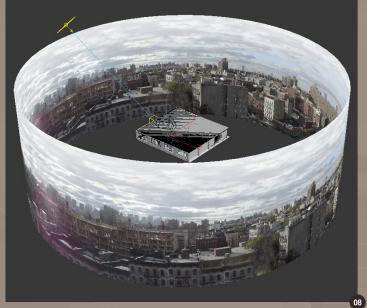


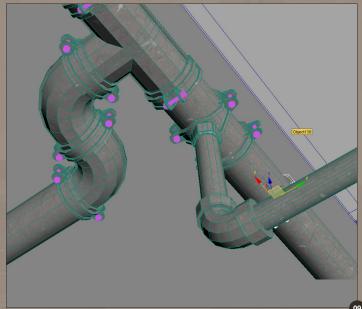
Making Of TRIBECA LOFT



Several people have asked me how I did my curtains (**Fig.07**). Well, this is Max's good old Cloth modifier, which can work wonders provided that (and here lies the secret), you give it a lot of time. Simulations, especially if you are using low-quality settings, tend to be very bouncy. Therefore it is important to up the settings (the generic heavy preset, for instance, works very well) despite the higher calculation times, to make sure that Self-Collision is on, and to let the simulation run until it really settles (which can be over as much as 800 frames — easily an overnight job, since cloth is single-threaded — no pun intended).

Another question I get asked is how I did the landscape outside. I hate adding back-plates in post as you can never get the environment to properly reflect in the scene (if you are after photorealism). Normally, I tend to use hyperlarge HDR textures (minimum 15,000 pixels wide), not just for lighting or reflection but also in lieu of back-plates. Yet given the amount of geometry in this scene and the complex, multilayered materials, using such mammoth textures just sent my render times off the charts. I compromised by using a low-res HDR map for lighting and an LDR panorama of New York I shot myself, which I mapped to a





cylinder outside the flat, quite a long distance from the windows (Fig.08). The cylinder has a V-Ray Light material (so that the environment generates nice speculars on objects inside the flat), but is set not to generate or receive shadows so that it does not interfere with the HDR lighting. The result of the cylindrical mapping is an exterior environment that looks right whichever way you turn your camera and means no complicated comping in at the end.

Navigating an eight million poly scene in Max is almost as slow as rendering it (Max 2012 looks much better than 2011 in that department so far). Fortunately, there are a few features you can use in order to ease the ordeal. One is to make sure that all Turbosmooth modifiers in the scene are set to only show at render time. I know it should be standard practice, but I find it very hard to have the discipline to do it systematically (**Fig.09**).

I'm pretty sure I mentioned everything that is remotely interesting about the making of this scene. Fig.10 – 17 shows the room from a few different angles.

# BERTRAND BENOIT

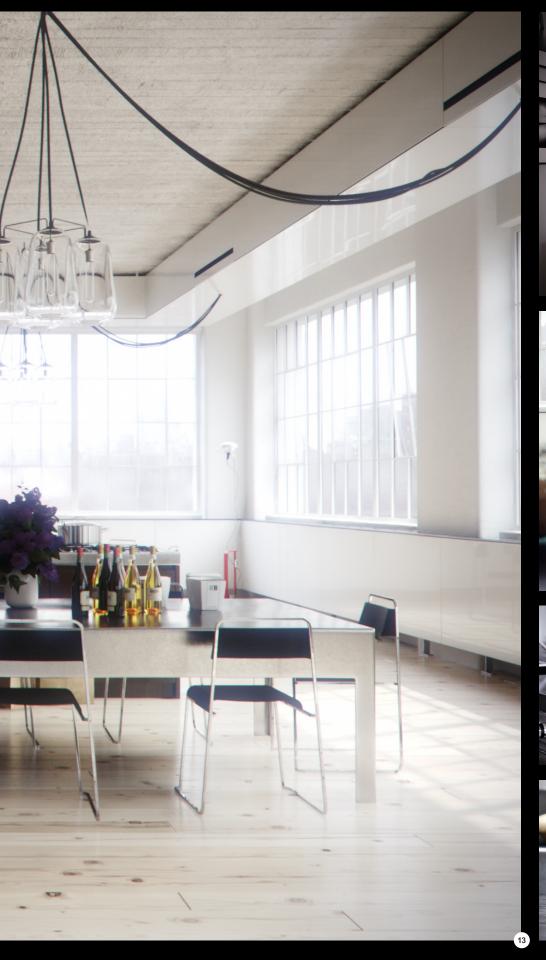
For more from this artist visit: http://www.bbb3viz.com/













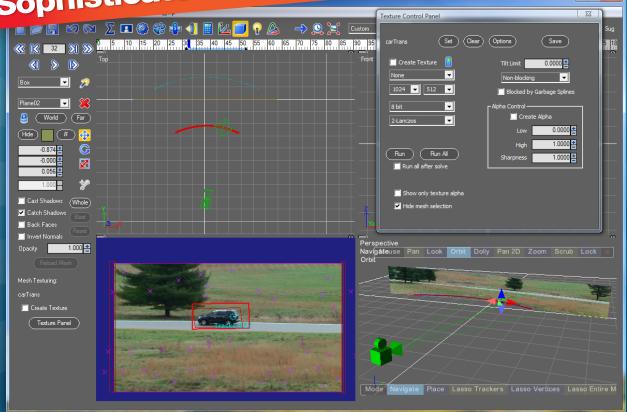








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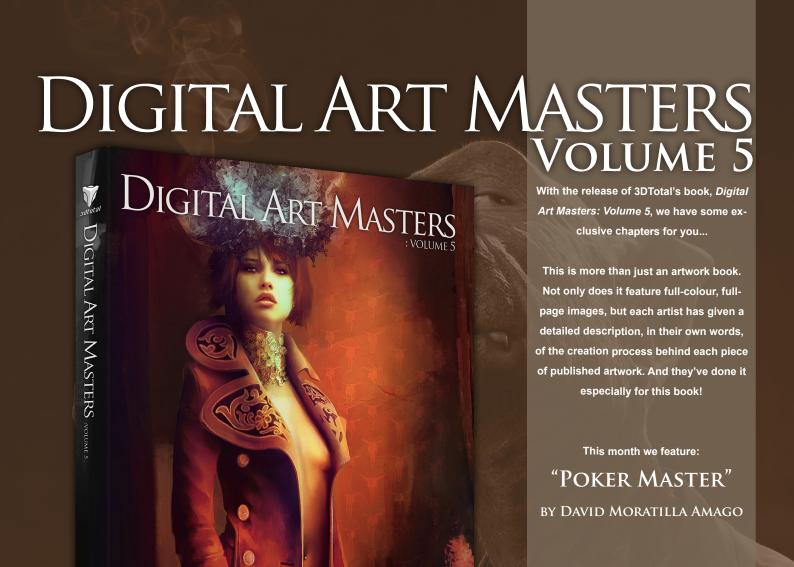
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# POKER MASTER

Text USED: ZBrush, Maya, Photoshop, BodyPaint, Mental Ray



INTRODUCTION INTRODUCTION
I made this image as a way of
applying all that I had learnt over the
past few years. I wanted to create a
sporting all that I had learnt over the
past few years. I wanted to create a
sport few years in wanted to create
some personally to make the image
to learn the frew generation! Tools like 2 Brush and this
project gave me the opportunity for exactly that.

A big part of the inspiration came from reading *Blacksa* comics and watching old poker films like *The Sting*, to gather some reference material.

MODELING
I made a basic model in Maya, taking care to ensure that
all of the polygons were four-sided before exporting it into
ZBrush (Fig.01).

I could have generated the UVs here as this would have been a good opportunity for projection mapping, however I decided I would use the UV layout later. With its software, the character pose doesn't matter and so I decided to wait until I had a more detailed mesh from

I imported the OBJs into a ZBrush file using SubTools before creating some reference objects like the table and cigar to help position the character using Transpose Master (Fig.02).







I deleted the polygons that were not going to be visible, like the torso and the interior of the shirt. I then had three different meshes; head, arms and shirt. I exported these





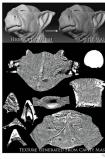




CHARACTERS



meshes to OBJ format to create the UVs with a UV layout. In the UV layout, I made some UV shells for the sake of a better distribution and less distortion. I tried to place the seams away from the camera view (Fig.04).







Sometimes I started by generaling the displacement map in zersian on one uses uniformation to modify the feature, using only maps. In Problombia pi used the activity maps for masking (Flg.08), I also used ZBrush's poly painting feature and BodyPaint to remove the seams, add detail and project photos. Finally, Joresded a Normal major paper to the passage of the property of the shader in Maye. This is the final result of the geometry in ZBrush (Flg.09).







- Fig.10: One light above his head acting as main light (light 1)

  One bluish backlight that accentuates the volume of the head (light 2)

  One bluish fill light coming from the left of the image to reduce the durk areas of the character (light 3).

You can see the effects of this lighting setup in Fig.11.

At this point, I decided to add an HDR sphere to add more variation to the lighting. In Photoshop, I merged different HDRs and placed the light sources of those HDRs so that they matched the lighting that I had previously created in Maye. I also duplicated some light sources from the 10R and changed the tue and intensity (Fig.12). I then mapped the HDR to an invisible sphere.



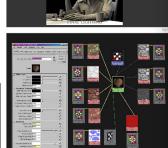




As this FG lighting would be added to the previously created lighting, I reduced the intensity of the initial Maya lights in order to get a similar light intensity with the FG sphere I'd just added (Fig.13).

For the skin, I used the mental ray shader, "missos fast skin," With the color base assigned, I adjusted the colors and the weightfindisiv salvate, interest of using a solid color for all those color boxes, I displicated the base feature and made some adjustaments in Photohopic to match the scolor that I had previously chosen. This resulted in adding more variety to the shader (Fig.14).





In this image I decided to add fur to increase the sense of realism. I made a differer render layer for each type of fur. This gave me the possibility to control all of them individually in post-production. I configured the render to show only the fur whilst the rest of the image would remain black.











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:VOLUME 5

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Mathieu Aerni, Matt
Dixon & Neil Blevins





# MODELING FEATURES OF THE HUMAN ANATOMY



Modeling the features of characters is something that has caused problems for many artists over the years. A good model can easily be spoiled by an incorrectly modeled feature, such as a hand or an ear. This eBook offers a step-by-step guide to help you make sure you never struggle with feature modeling again, presenting detailed chapters that have been written specifically for 3ds Max, Maya, Cinema 4D and modo.

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# MODELING FEATURES OF THE HUMAN ANATOMY: Chapter 3 - Hair

Software used: 3ds Max

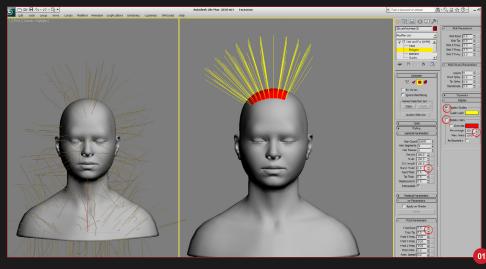
# HAIR TYPES

When tackling hair you should always keep in mind that a hairstyle says a lot about a character. Because of the fact that we see a variety of looks, styles and colors in women's hair, I've choose a woman as my subject matter. Also the longer the hair is the more it pushes your program.

First of all you should study the psychology of hair that you want to create. If you are making short hair you might be portraying a casual young women – an example of this trend could be the pop star Rihanna. But if you are trying to portray a more classical and elegant look, you would do something longer like Kate Middleton's. The color of the hair may also help to express something more radical, for example a bright color might identify a rocker or a punk. Looking at hair references before tackling hair is a good idea.

## THE HAIR BASE

We will use the 3ds Max dynamic hair system that is based on the famous plugin called Joe Alter Shave and Haircut for Maya. It is a system



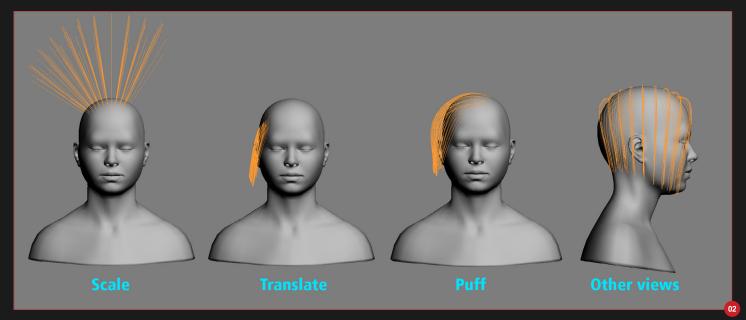
that allows you to comb your hair. It is very artistic and malleable. The good thing is that you don't have to spend money buying a new plugin. First add a Hair and Cut modifier to your model. By default the parameters don't help us so clear a few parameters to work more efficiently. In Polygon mode select the polygons where the hair will grow. I'm just going to comb one of the sides to work cleanly. Then add another modifier and work the next side.

Reset Frizz Tip and Frizz Root to 0 because you will want a clean hair base. Set Rand Scale to 0 as well as you don't want Random scale hair either.

Turn on Display Guides and turn off Display
Hairs. Move the Display Guides percentage to

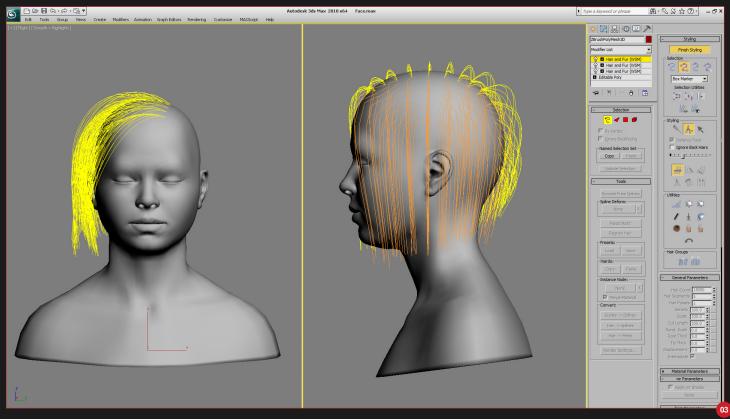
100 and set the hairs between 5000 and 10,000. These parameters control the amount of virtual hair seen in the viewport. Later we will use it extensively, but now we just want the guides to comb them (**Fig.01**).

Scale the hair with the Hair Comb in Scale mode. Usually the default size of the hair is too short, so lengthen it at the beginning because if you want to do it can be problematic. Now use the comb in Translate mode to comb the hair into position. Finally use Puff mode to lift the roots. These brushes are very sensitive, so work step-by-step so you don't move parts of the hair without realizing it. Turn on Ignore Back Hairs in the Styling menu if you have any problems (Fig.02).





# Chapter 3 - Hair MODELING FEATURES OF THE HUMAN ANATOMY



Copy your first Hair and Fur modifier and add another layer of similar hair in the same region. This will make it more realistic and add volume. Create the other side in the same way as we did before. If your hair looks a little long use the scissors to cut it a bit (Fig.03).

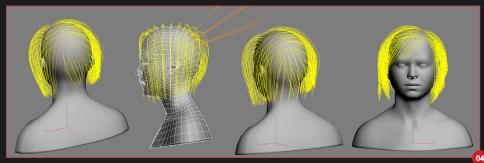
Now you can check the model in the other views to see if there have been any errors. In this case there is a lack of hair on the back of the head. Repeat the entire process with another modifier to repair any broken parts (**Fig.04**).

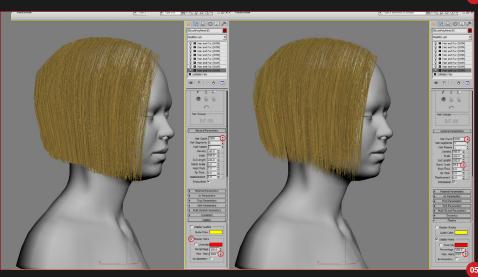
In total I now have eight Hair and Fur modifiers for my hair base. As you have seen I work step-by-step to help keep everything organized and clean. The default modifier we created had a hair count of 15,000; now we have eight modifiers the hair count is 120,000. This amount however is quite high and therefore when we render we should lower this amount. Once you are happy with the hair you will need to disable Display Guides setting, and enable Display Hairs on each of the modifiers. It is now that you will be able to see how many hairs you can get rid of to help the render times.

You can see in **Fig.05** that with only 3500 hairs we can cover this area. We can also see that the hair cut is too sharp and looks quite unnatural now. To fix this we need to increase

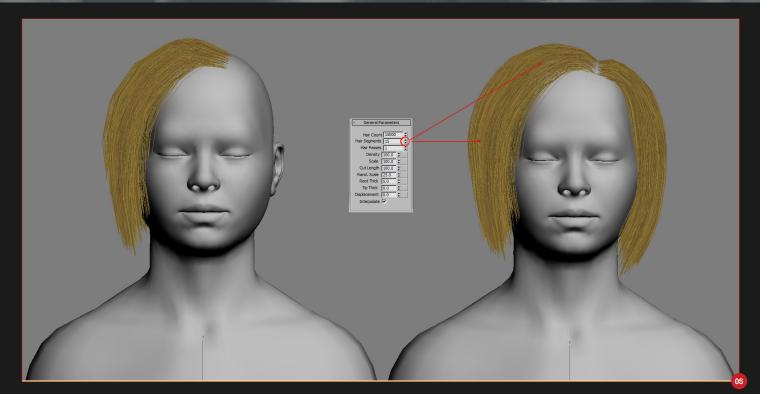
the parameters for Rand and Scale, and perhaps also Max. Hairs. Once you have done this you may have to change the hair count again until the head looks covered.

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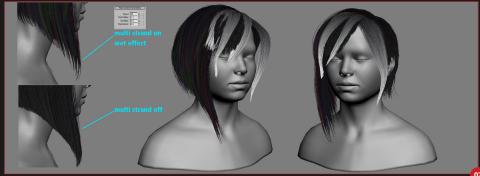
You must appreciate that hair is made up of a few segments and in general it does not create an artificial shape. Increase the Hair Segments parameter from default (5 to 10) to whatever you consider appropriate for the style you are creating. By the end of this tutorial I will have used 20 segments (**Fig.06**).

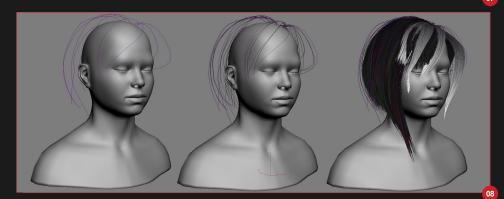
## DFTAIL

To create a wet effect on the hair I use Multi Strand. Look at **Fig.07** to see the effect it has. The top example looks more natural and feminine than the bottom one. If you use Multi Strand reduce the Hair Count. I've reduced from 8000 to 500 by using Multi Strand.

The next task is to finally improve the hair. This is possible because we now have all the hair in the viewport. For this I used the Hair Comb in Translate and Scale mode to make the roots stand up a little. I used Stand to push selected areas to a perpendicular orientation on the surface. I also used Clump, which forces selected area to move towards each other and rotate.

After a couple of hours I decided to change my reference and make the character look like





Rogue from *X-Men*. You can see the color in the viewport. It's a good idea to play with colors so you have a good idea of how things will look before the render.

If you look at most natural hairstyles, they have a thin layer of tangled hair. These fine hairs make everything look more natural. It is important to consider this if you want a realistic

result. Draw a few splines around the head and add hair and fur to them. You can't comb the hair as you did before because you're using splines, but you can move the vertices of the splines to change the position of the hair. Do not have too high a hair count, 300 or less should give you good results. Note that this hair has to be tangled, so use Frizz or Kink options to achieve this (Fig.08).



# Chapter 3 - Hair MODELING FEATURES OF THE HUMAN ANATOMY

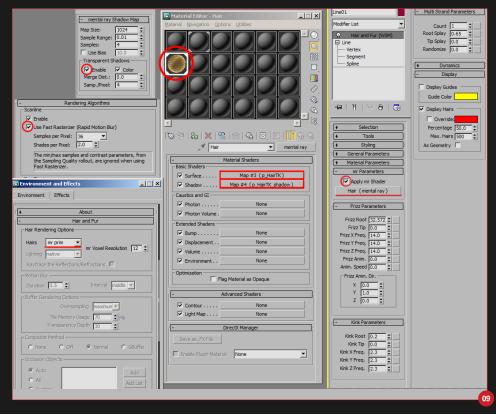
## Render

The best results for the render would be if we were to use the Scanline Renderer, but unfortunately with this renderer we can't use mental ray which we've used in the past tutorials. The default material settings are really limited. But even so it is possible to render with mental ray and get good results.

The first problem we have to deal with is shading with mental ray. We need to use a good shader to get a good render. Unfortunately 3ds Max hasn't got a good shader for this purpose. Fortunately some fantastic users have created a shader that works well with mental ray. I usually use the p\_HairTK material by Pavel Ledin – you can find at his online page (http://www.puppet.tfdv.com/download/shaders\_p\_e.shtml). Follow the instructions to install and understand the shader.

Once inside Max create a mental ray material and add a p\_HairTK map in the Surface slot and a p\_HairTK\_shadow map in the Shadow slot. Then instance this shader on each Hair and Fur tab in the mr Parameters.

When you render hair in mental ray you should avoid Raytrace and Final Gather because they are ridiculously slow! Try to get good results with



mental ray Shadow map and Active Transparent Shadows. I also turned on Fast Rasterizer to render faster. Remember, change your Hair and Fur rendering options from Buffer (Scanline renderer) to mr prim (mental ray) (Fig.09).

Finally it's render time! It's important to read the mental ray shader information to make sure you have the correct settings for a good render (Fig.10).

I hope you enjoyed this tutorial! If you have any questions or you want to share more information please send me an email. Thanks!

## IOSE LAZARO

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http://josemlazaro.com/

Or contact them at:

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# **MODELING FEATURES OF** THE HUMAN ANATOMY



Modeling the features of characters is something that has caused problems for many artists over the years. A good model can easily be spoiled by an incorrectly modeled feature, such as a hand or an ear. This eBook offers a step-by-step guide to help you make sure you never struggle with feature modeling again, presenting detailed chapters that have been written specifically for 3ds Max, Maya, Cinema 4D and modo.

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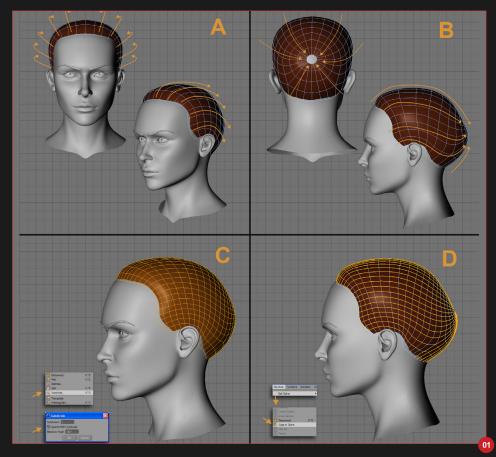
Skin

#### MODELING FEATURES OF THE HUMAN ANATOMY: Chapter 3 - Hair

Software used: Cinema 4D

I will show you the technique I use to create a ponytail. First create a mesh that is the same shape and size as the hair would be on your head mesh. The edge should follow the same direction as real hair would (Fig.01a – 01b). Do not subdivide too much from the base model or it can be a little difficult to manage later on. Once you have done this select all the hair polygons, right-click the mouse button and select Subdivide. In the window that opens click on HyperNURBS Subdivide (Fig.01c). Select the edges that follow the flow of the hair and click Structure > Edit Spline > Edge to Spline (Fig.01d).

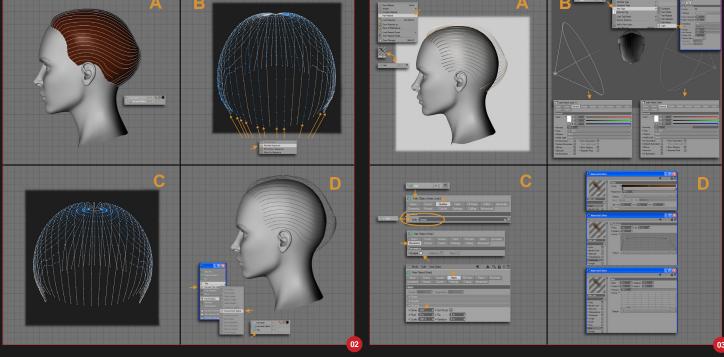
Now instead of the mesh you have curves as a reference for the hair (Fig.02a). Hide the mesh and select the curves in Point mode. You will notice that the curves are white and blue; select all the points in blue, click on them with the right mouse button and select Reverse Sequence (Fig.02b). Now the curves have their point's set up in the same direction (Fig.02c). Go to



the Hair panel and choose Convert from Spline. Now all the splines are converted to hairs. Hide the spline (**Fig.02d**).

In the Materials menu select the Hair Material and attribute it to the hair shader you created

(**Fig.03a**). Before proceeding create a provisional light setup consisting of three lights. Select the lights then right-click the mouse and select Tag Hair > Light. In the attributes of the tag choose Soft Shadow > Shadow Map 1000 x 1000 (**Fig.03b**). Select the hair object and in

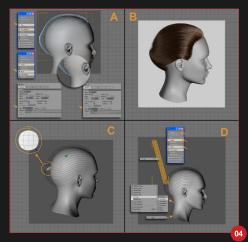




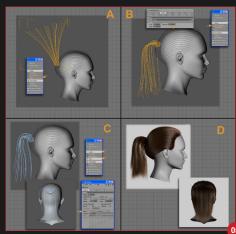
#### Chapter 3 - Hair MODELING FEATURES OF THE HUMAN ANATOMY

the Attributes panel select Guides. Under the heading link insert the mesh that corresponds to the head of your model or select the polygons that make up your head. This is done to ensure that the hair follows the movements of the head. If during this operation the hair should move in space you will need to move the pivot of the object, in our case the head. Also from the Attributes panel select Dynamics and un-check Enable. Whilst you're still in the Attributes panel select the Hair and enter the following numeric values; Clone: 140, Root: 5 and Tip: 8 (Fig.03c). Now select the Hair shader and in the Material Editor under the heading Color select the color that you want. Now go to Thickness and set the size of the root and size of the tip of the hair. Select Kink and set it in such a way as to give a slight movement to the hair fibers (Fig.03d).

In the Hair panel you can choose different types of tools to modify curves. One of the most important is the Brush tool. Select it, and



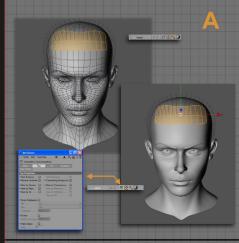
in the Attributes panel use the various options including Scale and Move. With these tools you can correct any errors or change the hairstyle (Fig.04a). Once you have done all these steps you can do a render test. If the hair appears too thick, you can change the parameters in Thickness (Fig.04b). Now you have completed the first part create a new disk-shaped object that you are going to position behind the head (Fig.04c). Select the new object from the Hair

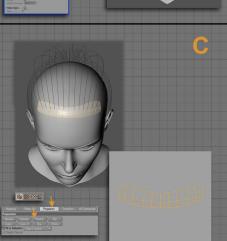


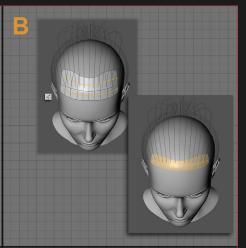
panel and select Add Hair. Select the new guides and scale them to fit your needs. Now select the Head object and click the right button under the heading Hair Tag and select Hair Collider (Fig.04d).

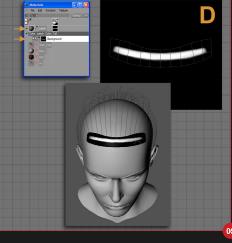
Select the area where the ponytail would curve and use the Clump tool in the Hair panel to curl the hair upwards to give it a funnel shape (Fig.05a). Select the hair object and assign 16 segments as guides. Press Play and let the hair down to create the desired shape. Press Stop and select Set as Dynamic in the Hair panel. This way you set the hair in its new resting pose (Fig.05b). You must select Guide in the Hair panel as a way to make selections with the Brush tool when you later go to move the hair with tools (Fig.05c). Duplicate the hair shader you made previously and rename it "Tail". Assign it to the ponytail so you can do a render to see the final results (Fig.05d).

With these steps done we will move on to creating a fringe. Extract a portion of the mesh from the hairline at the front of the model and give it a Compositing Tag. Deselect all the items to make them invisible during the render (Fig.06a). Rename the new mesh "Patch". If your mesh is too large, use the Cut tool to reduce the amplitude (Fig.06b). Give the patch a front projection (Fig.06c). Give it a new material and create a new texture in black and white. The base of the texture should be black (you can paint this with the Brush tool). With a white color draw a thick line where the hairline



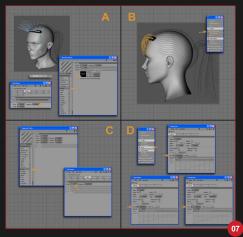






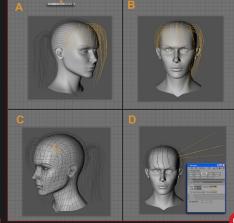
#### MODELING FEATURES OF THE HUMAN ANATOMY Chapter 3- Hair

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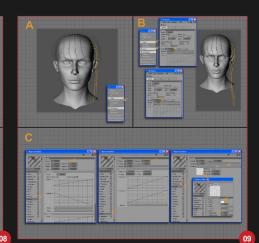


should be. This will cause the hair to grow only where the texture is white (Fig.06d).

Duplicate the Shader Hair from the Tail and rename it "Front Hair". Assign it to the new hair then open the Material Editor and assign the map to Length. Now open the Attributes panel and assigned eight segments to the curves (Fig.07a). Before proceeding disable the dynamics from the Tail Hair and un-check Enable under the heading Dynamics. Press



Play and let it go until the fringe reaches a pose to your liking, then press Stop. Open the Hair panel and click Set as Dynamics (Fig.07b). Select the Front Hair shader in the Material Editor and select Clump to give more movement to the hair. Now go to the Attributes panel and under the heading Hair assign a value to the Count (Fig.07c). In the Hair panel set Guides as the selection mode and, with the Brush tool, make all the adjustments you require (Fig.07d). Comb the fringe until you have the desired



shape. It is a good idea to hide the patch at this point. Remember that by pressing Ctrl you will make all the tools do the opposite. For example, if you're using the Scale tool by pressing Ctrl you will shorten rather than lengthen the hair (Fig.08a - 08b). At this point select a polygon near the temple (Fig.08c). In the Hair panel select Add Hair and set 20 segments to the new curves (Fig.08d).

Follow the same procedure as I have described. Drop the fringe in the new dynamic when you have achieved the desired shape by selecting Set as Hair Dynamics in the panel (Fig.09a). Comb the new fringe using the same tools described earlier (Fig. 09b). Duplicate the shader from the Tail and assign it to the new fringe. In the Material Editor change the parameters of the clump by selecting Wave and Length. The latter will assign a Noise map. Open the Noise panel and give it a very light gray color for option 1 and for option 2 a white

and set the Global Scale to 50% (Fig.09c).







At this point the new hair is ready so you can do the render (Fig.10).

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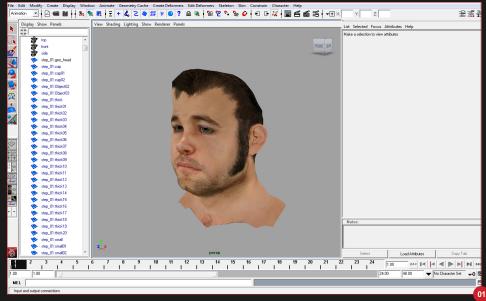
#### MODELING FEATURES OF THE HUMAN ANATOMY: Chapter 3 - Hair

Software used: Maya

Hair has long been the bane of many game artists due to the technical limitations of alpha sorting, texture resolution and triangle counts. Needless to say, video game hair takes lots of pre-planning and communication between art and tech. In this tutorial I will outline my basic workflow for creating a character's hair using alpha planes – a common method used on many hero and focus level characters.

Most of the time if a character isn't going to be speaking in a game, or they are just going to be shot at from a distance and forgotten about, you won't spend much time on the hair. Most likely they will have "helmet hair" – a hairstyle just modeled into their head. This is to save on rendering power that can be used more efficiently elsewhere, such as for the main characters and environments (Fig.01).

For more important characters or for a character you want to give more attention to (perhaps for your portfolio) they are usually given a hairstyle with alpha planes (basically, a series of grids surrounding the head to give a more interesting

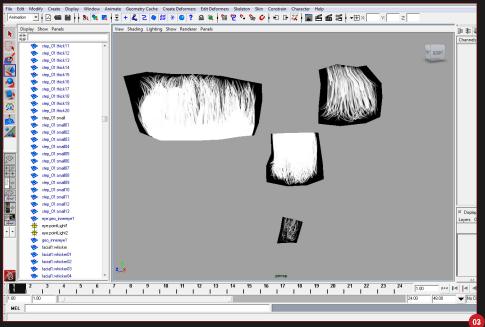




silhouette and believable look to the hair). I begin doing this by roughly sketching down what sort of hairstyle I would like my character to have (Fig.02).

Once I have a design in mind, I break it down into workable chunks called the "hair cap", "thick chunks", "medium chunks" and "facial hair." Then I quickly lay out these sections on a texture sheet and model planes to them. Basically, modeling out the actual chunks and assigning their UVs to the predefined texture space. This saves a ton of time when it comes to texturing and unwrapping as everything will already have been done for you (Fig.03).

Even though the hair planes are now textured, I will usually model in a flat rendered mode to clearly see the edges of my planes and get a better idea of where they intersect and rest. With alpha information visible, it can be hard to tell exactly what is going on in a complicated head of hair and, besides, you can always switch the materials on and off to check how the final product will look.





#### Chapter 3 - Hair | MODELING FEATURES OF THE HUMAN ANATOMY

I begin my texture by painting out the hair manually in black and white, using 8-bit alphas (fully blended alpha, not binary) in the form of the chunks I had determined, and then apply color using this black and white image as a mask and an alpha mask. The actual diffuse texture shouldn't have these hair strands visible to avoid MIP mapping issues. I generally avoid using photos for textures when it comes to game hair. Using the alpha plane method can mean it's hard to extract an alpha mask from the image and also the flow of the hair can conflict with the direction you want your alpha planes to be. However, for an extra level of detail I sometimes add a hair photo source on top of my hand-painted diffuse texture to give some color variance (Fig.04).

Next I begin to build out from my character's head. Generally I'll start with the bigger chunks, if not a whole piece encompassing the skull to avoid any holes that might show up. Keep in mind that each plane added is another element that taxes the rendering engine, so they must be used wisely. Starting big and then going small allows you to cover much more surface area and then add smaller detail planes as needed, and also allows you to scale back if things get out of hand or when creating level of detail models (Fig.05).

In this case, much of the detail has been painted onto the underlying head model saving me the hassle of patching holes that would show a bald head. So the goal here is to add depth to the very rough hairstyle underneath.





After the bigger patches are laid down, I begin placing smaller chunks of hair that will add depth to the character's hairstyle (**Fig.06**). Trying not to go too overboard with small details, I'm looking to get as much mileage out of as few pieces as I can for rendering purposes. I also try to avoid intersecting geometry as this can confuse the rendering engine in the game – if an

object is both in front of and behind another plane, it can get confusing and lead to errors as some game engines won't be able to detect which one is correct.

This character has a bit of scruff, so adding some facial hair could be a nice touch (**Fig.07**). I follow the same methods as above, just at





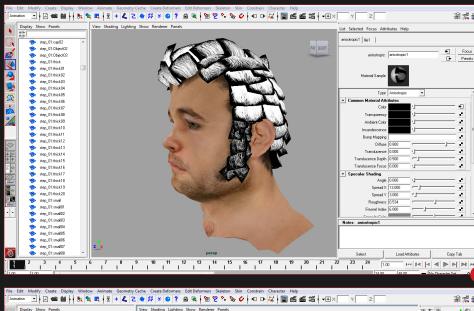
#### MODELING FEATURES OF THE HUMAN ANATOMY Chapter 3 - Hair

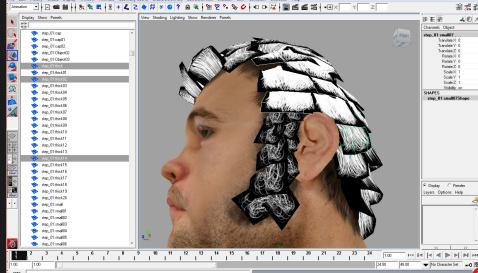
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a smaller scale and not being too meticulous about covering the entire surface. You can most likely get by with a few sparse patches to blend in with the face – just to give that extra hint of depth. Keep in mind that facial hair will need to animate with the face, so try to keep the roots of these alpha planes close to or intersecting edges on the face that will move as they will be easier to weight.

Most game rendering engines get confused when an alpha plane tries to overlap itself – like with long curly strands (**Fig.08**). It will not be able to tell what part of the object is in front and what part is in the back, leading to some ugly results (usually, seeing through the entire character). Most of the time that type of style is avoided, used sparingly or modeled in without using alpha information – basically a very detailed shell with little to no alpha information. So, always try to keep your alpha planes fairly clean and don't worry too much about twisting detail into the actual model.

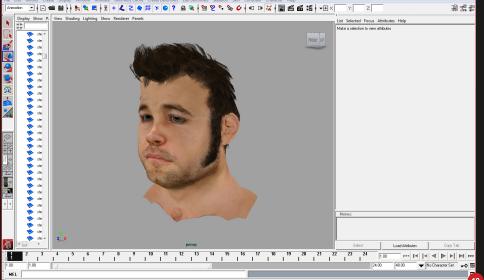
Maya has a similar problem when rendering hair planes and may require you to physically break off some of the planes if you have joined them with others. Basically, Maya will try to draw the entire plane first and then the head, or something to that effect. If you split the objects, it helps the render engine order them properly as they now can be processed as individual





items – again though, each object is an added burden to the game engine, so be modest (Fig.09).

For the most part, I tend to work symmetrically as it makes the entire process much quicker. If the mirrored look is way too obvious, it can also be skewed in the end by adding a few accent planes to throw off the eyes. Adding just a few rogue strands of hair or taking a few strands that you have already made and offsetting their rotation or position can add to the hairstyle's realism (Fig.10).



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## **MODELING FEATURES OF** THE HUMAN ANATOMY



Modeling the features of characters is something that has caused problems for many artists over the years. A good model can easily be spoiled by an incorrectly modeled feature, such as a hand or an ear. This eBook offers a step-by-step guide to help you make sure you never struggle with feature modeling again, presenting detailed chapters that have been written specifically for 3ds Max, Maya, Cinema 4D and modo.

CHAPTER 2 | MAY ISSUE 069 Eyes

CHAPTER 4 | NEXT ISSUE

Chapter 5 | August Issue 072 Feet

Skin

#### Modeling Features of the Human anatomy: Chapter 3 - Hair

Software used: Modo

#### Modeling Human Hair

Hair is an important part of making a CG human and is definitely not an easy one.

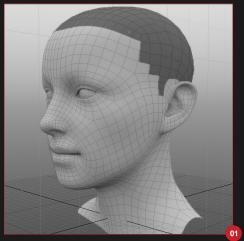
There are many different ways to deal with this subject depending on the hairstyle and overall production purpose and standards.

For example, if you were making a character for a next gen game then you would use strips of polygons mapped onto the character with hand-drawn or photographic hair used to texture it. On the other end of the scale to this is high quality cinematic or feature film hair, which has thousands or even millions of individual hairs that form complex hairstyles or fur. Both techniques, if done well, can lead to convincing-looking hair.

In this tutorial we are going to cover how to create long hair using the hair system in modo, which is very similar to the hair systems found in all the major 3D applications such as Maya or 3ds Max. If you have any experience with Maya or Max hair systems you will know about the long, frustrating render times associated with the hair systems but that is not the case with modo. In my humble opinion modo's rendering engine is one of the fastest on the market, and I am sure that no other program matches modo's ability to render individual hairs.

Styling hair in modo can be done in several different ways, for example textures, combing brushes or curves. For the hairstyle I am going to create I will rely on curves to control the hair position, shape and length.

The drawing of the curves will play a big role in the final quality of the hair so the more care you invest in the curves the better the result will be at the end. I am going to use the woman

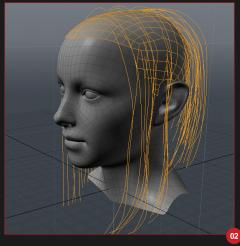


head 01 model that comes in the modo Asset Library as the head that we will add hair to. To create hair in modo you need to choose some geometry for hair to be generated on. So to start with extract a new mesh in the region where the hair would be (**Fig.01**).

Once you have selected the desired polygons press Ctrl + C to copy the geometry, then open a new item mesh and press Paste (Ctrl + V). Now that you have separated the geometry give it a material by pressing M on the keyboard and name it "Hair". Don't expect to see hair at this point because it's not important yet. You can add a fur layer to the material, but you would get a weird looking grassy fur which is not our goal so let's leave it for now.

At this point you should also add a darker color to the material so you can see the difference between the two meshes. Now it's time to lay down some curves to decide the direction and length of the hairs. If you have no previous experience with modo curves you should first try a few practice runs to make yourself familiar with them.

You will find the modo Curve palette in the Geometry menu. Modo has several different ways to create curves such as Bezier, Curve and Sketch and I encourage you to try them all and find the one that suits you the most. I will use the Curve tool because I find it the easiest to control and draw with.



Here are few important things to take care of when creating curves to guide the hairs:

- Start drawing curves from root to tip
- Start drawing curves from the bottom of the scull upwards so the top curves can cover the bottom ones
- Think of each curve as a wisp of hair wide and vary the distance between each wisp and the wisp next to it
- Keep the curves as simple as possible to make everything easier to control later in the process
- Be patient because the more time you invest in this part the more rewarding the result will be

Here is what I came up with after half an hour of working with curves (**Fig.02**). As I said before I use the Curve tool and after I have drawn one I often copy the curve and reposition it.

Modo quick tip: To quickly reshape the curve you can use the Element Move tool which has a soft falloff. You will find the Element Move tool in the Deform tab or by pressing shortcut T.

Once I have completed one side of the head I simply mirror all the curves to the other.

To make this tutorial as simple as possible I have chosen a simple hairstyle, but even with complicated hairstyles it is just a case of carefully placing curves. You don't have to generate all the hairs on one mesh if you want



#### Chapter 3 - Hair MODELING FEATURES OF THE HUMAN ANATOMY

to do a complex hairstyle; you can split the hair mesh into few pieces.

At last the time has come to add some hair. Go to the shader tree and add a fur layer to the previously created material called Hair. You will find the fur material in the special materials under Add Layer on the top of the shader tree. If you did everything right you should see short fur like hair by default. Select the fur material and under the properties tab go to Fur Shape. In the Fur Shape menu change the guides to Range. Now you have wild looking long hair, but let's go for something more subtle. In the Fur properties change Spacing to 1.5 and set the Max Segments to 64. Go to Fur Shading and set Guide Range to 50mm and Jitter to 10%. You can see the rest of my settings in Fig.03.

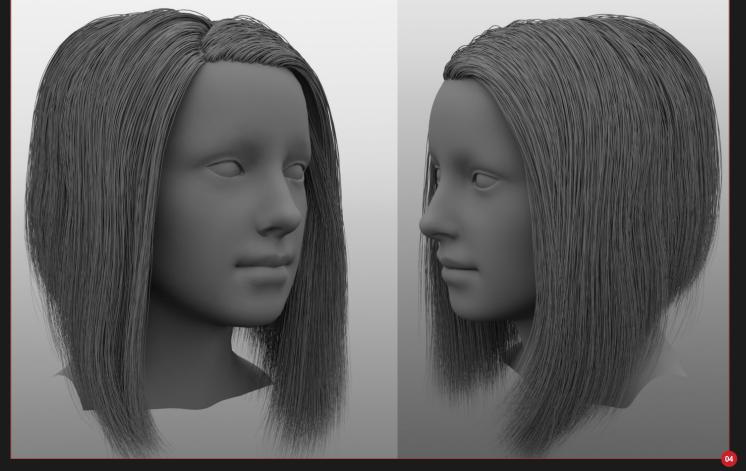
You can still re-shape the existing curves with the Element tool or even add new curves. If you have done everything right you should have a similar result to **Fig.04**. As you can see the



hair is looking pretty thick and unnatural but it's better to leave it this way to shorten render times while you run some render tests and make some final adjustments.

Now its time to set some of the hair's material properties, such as color and specular

reflections. To give some variation to the color of the hair we will use gradient layers with a few different color keys. Go to your hair material and add a new layer from the Processing menu gradient. The newly created layer will be automatically set to diffuse. Now select a gradient layer and set the Input Parameter to

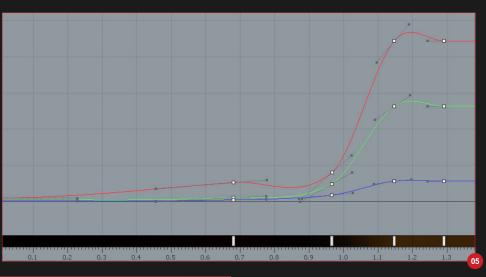


#### MODELLING FEATURES OF THE HUMAN ANATOMY Chapter 3 - Hair

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Particle ID. This will enable you to control the color variation of individual hairs by setting many different colors in the gradient layer. You can copy my settings as a starting point (Fig.05).

I also added another gradient layer and set the Input parameter to Fur Parametric Length. This gradient is from black to white and affects the color of the hair from the root to tip and I use it to darken the overall color of the hair by setting it to Multiply blending. For the final image I set the spacing in the fur material to something like 300mm or even less.



Modo quick tip: Once you have created a material for the hair you can save it as a preset so you can reuse it on different hairstyles. Right-click on the material and choose "save preset".

In the render every hair is geometry so make sure that you set the geometry to cache in the rendering preferences as high as you can. Here is what I came up with after a few tweaks and if you have done everything right you should have something like **Fig.06**.

Don't hesitate to experiment with Jitter, Frizz or Kink settings because some variation can lead to very realistic looking hair. I hope you have enjoyed this tutorial and I'll see you in the next chapter.

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